IN THE SPECIFICATION:

Paragraph beginning at line 14 of page 2 has been amended as follows:

The first conventional technique has presented a problem of an insufficient resolution for observation in observing a surface or cross-sectional structure of a sample using a scanning ion beam microscope image or SEM image. In regard to the spatial resoultion of SEM images, a ~~spacial~~ spatial resoultion much like one(1) nanometer is known to be the best performance that can be achieved by SEMs. However, the resolution is insufficient to manage a film thickness because a thickness of the thinnest one of film structures forming a sample is of the order of one(1) nanometer.

Heading at line 18 of page 4 has been amended as follows:

~~DISCRIPTION~~ DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Paragraph beginning at line 7 of page 8 has been amended as follows:

First, examples of electromagnetic measurement with respect to a target sample plane will be described. In the case of measuring dopant concentrations or dielectric constants, the steps below are followed: to dispose a highly sensitive capacitance detector in proximity to a probe; to

apply an alternating current (AC) from the bias voltage source to a sample; detect a change in capacitance just under the probe synchronously; and to calculate the dopant concentration or dielectric constant of the sample based on the detected change of the capacitance. Further, in the case of measuring a target sample plane or cross section in electrical conductivity, the steps below are followed: to place a conducting probe in contact with a portion to be measured; to scan a voltage according to a bias voltage source; to detect a current flowing at that time with the micro-ampere meter described above; and to determine an I/V curve at the contact point. Alternatively, the probe may be made to scan the portion to be measured with the bias voltage kept constant, thereby to carry out current image mapping. In the case of measuring a target sample plane or cross section in potential, the steps below are followed: to apply an AC voltage to the sample face; to control the voltage of the bias voltage source so that the amplitude of a cantilever oscillating according to the frequency of the AC electric field reaches zero; and to measure a surface potential of the sample based on the control voltage. Finally, in the case of using a magnetic-force microscope, a magnetic probe is used to determmine a magnetic domain where the magnetic leakage appears within the surface or cross section.